

**A.4.17 AOC 27****Description**

As depicted on Figure A.4.14, AOC 27 consists of an above ground product pipeway located within Tank Basin 777, in the Refinery's East Yard. The pipeway is situated directly south of the tank, and is orientated in an east-west direction. This AOC is approximately 170 feet long by 45 feet wide and varies in depth from one to three feet below grade. The pipeway currently consists of 27 steel pipes positioned over an unlined, earthen trench. The trench is contained on the north side by a cement block wall and to the east and west by poured concrete walls. An OWSS catch basin, which controls partial drainage of the pipeway, is located in the eastern end of the pipeway.

Chevron identified AOC 27 in October 1998 during a cleanup effort related to a No.2 fuel oil release in the pipeway. The cleanup effort consisted of soil excavation and post excavation sampling. A total of 15 post-excavation samples were collected and analyzed for TPH (see Table A.4.14). Four of these samples were further analyzed for VOCs. A detailed account of the activities conducted within the pipeway can be found in Chevron's March 4, 1999 AOC 27 SWMU/AOC Assessment Report (SAR).

As shown on Figure A.4.14, and summarized on Table A.4.14, data from eight borings, 14 soil samples, two monitoring well samples, and two hydropunch samples have been used to characterize this AOC. In addition, relevant data from AOC 16 are also shown on Table A.4.14 for delineation purposes. During the Full RFI, 14 soil samples were collected from six soil borings. Eight samples were analyzed for TCL VOCs, SVOCs, and metals, and six samples were analyzed for BTEX and arsenic only. One sample was also analyzed for SPLP lead and physical characteristics.<sup>1</sup>

**Soil**

The following table summarizes the number of samples where delineation criteria were exceeded in soil samples:

<b>Constituents of Concern</b>	<b>Surface Soils (0 to 2 ft)</b>	<b>Fill Material (&gt;2 ft)</b>	<b>Native Soils</b>	<b>Total</b>
Benzene	0/3	3/7	0/4	3/14
Other VOCs	0/3	0/7	0/4	0/14
Benzo(a)pyrene	0/1	0/5	0/2	0/14
Other SVOCs	0/1	0/5	0/2	0/14
Lead	0/1	0/5	0/2	0/14
Other TAL Metals <sup>a</sup>	0/3	1/7	0/4	1/14

<sup>a</sup>Totals do not include naturally-occurring metal compounds in excess of the delineation criteria (Al, Ca, Fe, Mg, Mn, K and Na).

<sup>1</sup>Physical characteristics specified in Appendix A, Task IV of Module III of the HWSA Permit included saturated and unsaturated permeability tests, moisture content, relative permeability, bulk density, porosity, soil sorptive capacity, CEC, TOC, pH, Eh and grain size distribution.

**Surface Soils (0 to 2 feet bgs)**

No petroleum-related impacts were noted in surface soils at AOC 27, and no COCs were detected above the soil delineation criteria any of the surface soil samples from AOC 27.

**Fill Materials (>2 feet bgs)**

Staining, odor, and other evidence of petroleum-related impacts were observed in the subsurface fill material that ranges in thickness from approximately eight feet to 10 feet. As shown on the above table, two of the subsurface fill samples contained benzene above the applicable soil delineation criterion at concentrations of 2.5 mg/kg and 11 mg/kg. Arsenic (23.9 mg/kg), which was also detected slightly above the soil delineation criterion in one sample (S0850D3) is well within the normal range for soils, particularly glauconitic soils in the Coastal Plain (Saunders, 2003).

**Native Material**

A clay/peat layer underlies the fill material in this part of the Refinery. In general, the clay layer is approximately five to 10 feet bgs. Only minor indications of petroleum impacts (e.g., petroleum odors) have been noted in the native material in this portion of the Refinery. Naturally-occurring iron was the only constituent to be detected above the applicable criteria in native soil samples at AOC 27. Therefore, any site-related impacts have been vertically delineated and are associated with the fill material.

**Groundwater**

As summarized on Table A.4.14, two hydropunch groundwater samples were collected from AOC 27 in 1999 during the 1st-Phase Groundwater Investigation. These samples contained VOCs and SVOCs above the applicable groundwater delineation criteria. However, these samples were collected using traditional hydropunch methodology, and SVOCs that were detected in the hydropunch samples are not considered to be representative of ambient groundwater conditions.

Two wells, MW-145 and MW-146, located within or near AOC 27. Cobalt (121 µg/L) was the only COC detected above the delineation criteria in the sample from MW-145. Benzene (100 µg/L), a TIC (2-methylpentane at 180J µg/L), and arsenic (79.2 µg/L) were detected above the applicable groundwater delineation criteria in the sample from MW-146. A more detailed discussion of potential groundwater impacts in the vicinity of AOC 27 can be found in Section 8 of the RFI Report.

**Summary**

Based on the findings, exceedances of benzene (3.1 to 11 mg/kg) above the delineation criterion have been found within the sub-surface fill unit at soil boring locations S1409 and S1410. These exceedances are confined to the subsurface fill unit and have been vertically delineated. Although arsenic was also detected above the applicable

delineation criterion at one location, the detected concentration (23.9 mg/kg) is well within the normal range for soils, particularly glauconitic soils in the Coastal Plain (Saunders, 2003). Both soils and groundwater in the vicinity of AOC 27 will be included for further evaluation in the CMS.